

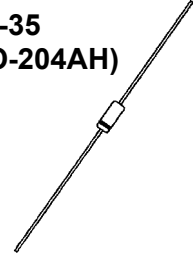
### DESCRIPTION

The popular 1N746 thru 1N759A and 1N4370 thru 1N4372A series of 0.5 watt Zener Voltage Regulators provides a selection from 2.4 to 12 volts in standard 5% or 10% tolerances as well as tighter tolerances identified by different suffix letters on the part number. These glass axial-leaded DO-35 Zeners are also available with an internal-metallurgical-bond option by adding a "-1" suffix. These are also available in JAN, JANTX, and JANTXV military qualifications. Microsemi also offers numerous other Zener products to meet higher and lower power applications.

**IMPORTANT:** For the most current data, consult MICROSEMI's website: <http://www.microsemi.com>

### APPEARANCE

**DO-35  
(DO-204AH)**



### FEATURES

- JEDEC registered 1N746 thru 1N759A and 1N4370 thru 1N4372A series
- Internal metallurgical bond option available by adding a "-1" suffix
- Also available in JAN, JANTX, and JANTXV qualifications per MIL-PRF-19500/127 by adding the JAN, JANTX, or JANTXV prefixes to part numbers for desired level of screening as well as "-1" suffix; (e.g. JANTX1N751A-1, JANTXV1N758C-1, etc.)
- Military Surface Mount equivalents also available in DO-213AA by adding a UR-1 suffix in addition to the JAN, JANTX, and JANTXV prefix; e.g. JANTX1N962BUR-1 (see separate data sheet)
- Commercial Surface Mount equivalents available as MLL746 to MLL759A and MLL4370 to MLL4372A including the "-1" suffix in the DO-213AA MELF style package (consult factory for others)
- DO-7 glass body axial-leaded Zener equivalents are also available

### MAXIMUM RATINGS

- Operating and Storage temperature:  $-65^{\circ}\text{C}$  to  $+175^{\circ}\text{C}$
- Thermal Resistance:  $250^{\circ}\text{C/W}$  junction to lead at 3/8 (10 mm) lead length from body, or  $310^{\circ}\text{C/W}$  junction to ambient when mounted on FR4 PC board (1 oz Cu) with 4 mm<sup>2</sup> copper pads and track width 1 mm, length 25 mm
- Steady-State Power: 0.5 watts at  $T_L \leq 50^{\circ}\text{C}$  3/8 inch (10 mm) from body or 0.48 W at  $T_A \leq 25^{\circ}\text{C}$  when mounted on FR4 PC board as described for thermal resistance above (also see Figure1)
- Forward voltage @200 mA: 1.1 volts
- Solder Temperatures:  $260^{\circ}\text{C}$  for 10 s (max)

### APPLICATIONS / BENEFITS

- Regulates voltage over a broad operating current and temperature range
- Selection from 2.4 to 12 V
- Standard voltage tolerances are plus/minus 5% with A suffix identification and 10 % with no suffix
- Tight tolerances available in plus or minus 2% or 1% with C or D suffix respectively
- Flexible axial-lead mounting terminals
- Nonsensitive to ESD per MIL-STD-750 Method 1020
- Minimal capacitance (see Figure 3)
- Inherently radiation hard as described in Microsemi MicroNote 050

### MECHANICAL AND PACKAGING

- CASE: Hermetically sealed axial-lead glass DO-35 (DO-204AH) package
- TERMINALS: Leads, tin-lead plated solderable per MIL-STD-750, method 2026
- POLARITY: Cathode indicated by band. Diode to be operated with the banded end positive with respect to the opposite end for Zener regulation
- MARKING: Part number
- TAPE & REEL option: Standard per EIA-296 (add "TR" suffix to part number)
- WEIGHT: 0.2 grams
- See package dimensions on last page

**ELECTRICAL CHARACTERISTICS\* @ 25°C**

JEDEC TYPE NO.  (NOTE 1)	NOMINAL ZENER VOLTAGE $V_Z @ I_{ZT}$ (NOTE 2)	ZENER TEST CURRENT $I_{ZT}$	MAXIMUM ZENER IMPEDANCE $Z_{ZT} @ I_{ZT}$ (NOTE 3)	MAXIMUM REVERSE CURRENT $I_R$ @ $V_R = 1$ VOLT		MAXIMUM ZENER CURRENT $I_{ZM}$ (NOTE 4)	TYPICAL TEMP COEFF. OF ZENER VOLTAGE  $\alpha_{VZ}$ %/°C
				@25°C	@+150°C		
				$\mu A$	$\mu A$		
1N4370	2.4	20	30	100	200	150	-.085
1N4371	2.7	20	30	75	150	135	-.080
1N4372	3.0	20	29	50	100	120	-.075
1N746	3.3	20	28	10	30	110	-.066
1N747	3.6	20	24	10	30	100	-.058
1N748	3.9	20	23	10	30	95	-.046
1N749	4.3	20	22	2	30	85	-.033
1N750	4.7	20	19	2	30	75	-.015
1N751	5.1	20	17	1	20	70	+/- .010
1N752	5.6	20	11	1	20	65	+ .030
1N753	6.2	20	7	.1	20	60	+ .049
1N754	6.8	20	5	.1	20	55	+ .053
1N755	7.5	20	6	.1	20	50	+ .057
1N756	8.2	20	8	.1	20	45	+ .060
1N757	9.1	20	10	.1	20	40	+ .061
1N758	10.0	20	17	.1	20	35	+ .062
1N759	12.0	20	30	.1	20	30	+ .062

\* JEDEC Registered Data

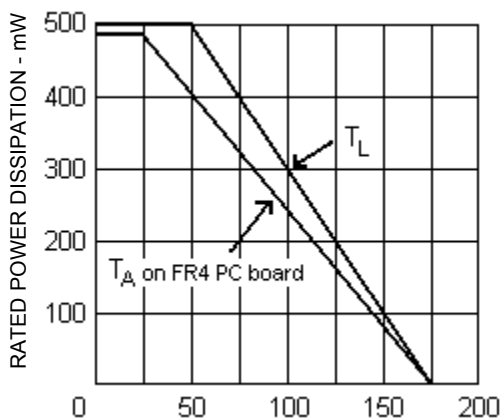
**NOTE 1:** Standard tolerance on JEDEC types shown is +/- 10%. Suffix letter A denotes +/- 5% tolerance; suffix letter C denotes +/- 2%; and suffix letter D denotes +/- 1% tolerance.

**NOTE 2:** Voltage measurements to be performed 20 seconds after application of dc test current.

**NOTE 3:** Zener impedance derived by superimposing on  $I_{ZT}$ , a 60 cps, rms ac current equal to 10%  $I_{ZT}$  (2mA ac). See MicroNote 202 for typical zener impedance variation with different operating currents.

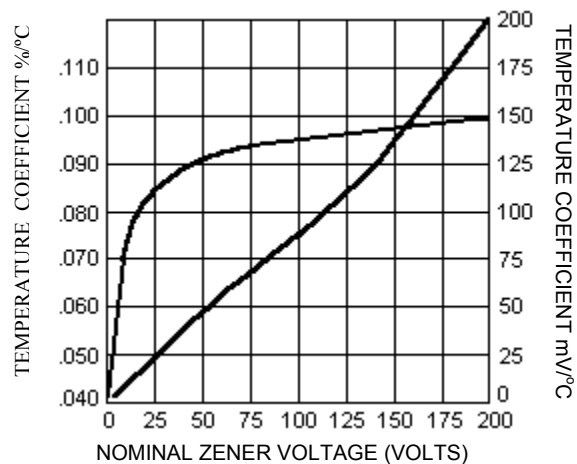
**NOTE 4:** Allowance has been made for the increase in  $V_Z$  due to  $Z_Z$  and for the increase in junction temperature as the unit approaches thermal equilibrium at the power dissipation of 400 mW.

**GRAPHS**



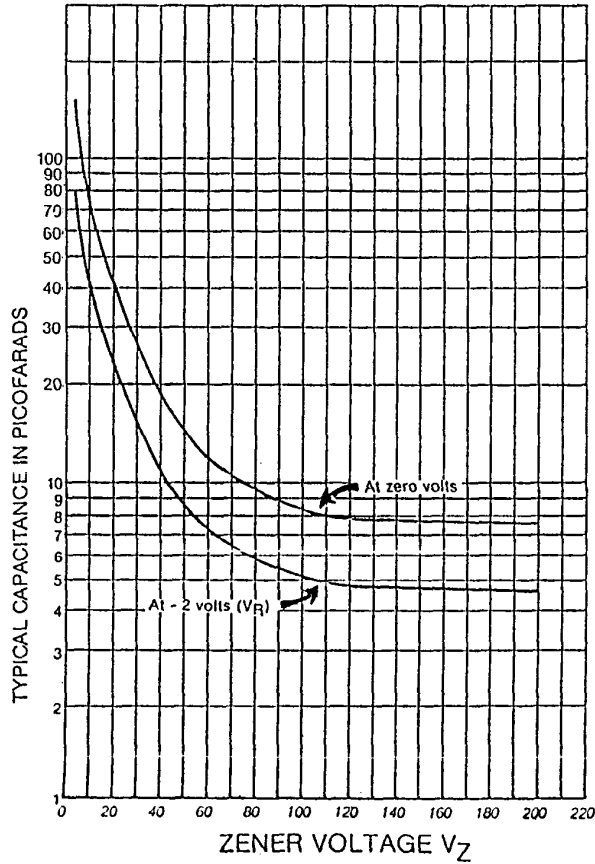
$T_L$  - LEAD TEMPERATURE (°C) 3/8" FROM BODY or  
 $T_A$  on FR4 PC BOARD

**FIGURE 1**  
POWER DERATING CURVE



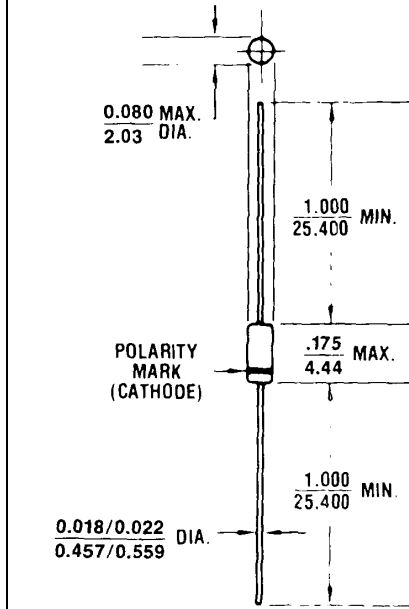
**FIGURE 2**  
ZENER VOLTAGE TEMPERATURE  
COEFFICIENT vs. ZENER VOLTAGE

CAPACITANCE vs.  $V_Z$  CURVE



**FIGURE 3**  
CAPACITANCE vs. ZENER VOLTAGE  
(TYPICAL)

**PACKAGE DIMENSIONS**



All dimensions in: INCH  
mm